Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

In the Matter of	)	
	)	
Improving Public Safety Communications	)	
In the 800 MHz Band	)	WT Docket No. 02-55
	)	
Consolidating the 900 MHz Industrial/	)	
Land Transportation and Business Pool	)	
Channels		

Comments of the Snohomish County Emergency Radio System (SERS)

February 10th, 2003

Background

We are a licensee in the Public Safety Radio Service at 800 MHz and will soon commence operation of our regional trunked radio system under call signs WPMZ616 (through our partner, the City of Everett, Washington) and WPUP506. We have begun construction of our countywide public safety radio system that will serve a population of approximately 618,600, covering an area of 2,090 square miles. Our radio system user base consists of approximately 50 agencies using upwards of 4,000 radios. Given the scope of our investment in development effort and taxpayer dollars, we are concerned about the potential impact on our future operations resulting from interfering NEXTEL facilities. I'd like to add that we have been actively involved in discussions with the managers of neighboring public safety radio systems and are aware that they are suffering from numerous instances of harmful interference to their operations.

Support for Consensus Plan and Supplemental Comments

We believe that the consensus plan, that while vague in a number of areas, is a significant effort and effectively addresses many issues arising from interference to public safety radio systems from NEXTEL operations. As such, with the modifications proposed in this document, we strongly support its eventual acceptance and implementation through a rule-making process.

We should add that we cannot comment in any substantial way on relocation funding, relocation financial administration, or the underlying legal issues (some of which seem to bridge public and commercial entities), nor do we have adequate experience to comment on the reallocation of the 1.9 GHz spectrum other than to note that it is clear that the plan as proposed fails without the transfer of this spectrum to NEXTEL control.

It appears that the financial and spectrum management arrangements may be under-developed and will require additional Commission input before being fully formed. These are significant areas of the proposal, which at first glance, may be in conflict with existing Federal, state and local statutes. Clearly, additional input from legal resources is required. We would also prefer to see additional membership in the proposed RCC from government, with at least three members representing the interests of government licensees.

General Comments

Our comments are limited to the specific viability of the consensus plan as applied to US-Canada border Region 5 (and indirectly to Region 4 since the eastern half of our state lies within Region 4. Given that the draft band plan included in the Supplemental Comments is the same for both regions, no further reference will be made to Region 4). We believe that transposition of the NPSPAC 866-869 MHz assignment to 851-854 MHz appears viable. However, the plan is vague with regard to band plans for the border regions

(treating border area issues only briefly in Appendix G, rather than within the body of the comments) and does not seem to adequately anticipate the complexity of migrating existing users who are distributed over the 851-854.75 MHz range and the *entire* NPSPAC allocation, including those licensees making extensive use of the Canadian-primary NPSPAC allocations, to the much narrower spectrum segments proposed.

We also note that one of the possible interpretations of the proposed band plan for Region 5 does not include the required guard band protections for the Canada-primary portion of the NPSPAC band (which is heavily used by U.S. licensees on a secondary basis to Canadian operations). We similarly note that the band plan as proposed does not provide any guard band protections for business, industrial-land transportation or high elevation SMR (high-SMR) licensees. Inclusion of even a reduced guard band should be a part of any proposal. Indeed, with the alternative plan proposed by SERS, a guard band is included.

The Supplemental Comments refers to U.S use (on a signal strength limited basis) of Canadian primary channels without identifying a rule basis for such use. Commission action on WT Docket 02-55 must allow such use of this previously 'off-limits' spectrum by 'rule', rather than waiver, a part of any adopted plan.

Additionally, there is no clear proposal to ensure harmony between U.S. non-border area interoperability channels, border region interoperability channels, and Canadian and Mexican interoperability channels. At a minimum, harmonization must be present in any interoperability channels used within the United States, including border regions.

There are also significant technical challenges in making sure that the transposition of the entire NPSPAC band downward is feasible. Additional manufacturer input is required to

confirm viability for such a change and to confirm if software development can follow the consensus plan time line.

Response to the Region 5 Bandplan as Proposed in Chart G-4, Appendix G, Supplemental Comments

For Border Region 5 (and by implication, Border Region 4), either of the two interpretations we are able to make of the specifics proposed in the Consensus Plan and Supplemental Comments of the Consensus Parties submitted in response to WT Docket 02-55 *are ultimately flawed and should be rejected because of these flaws*. The Consensus Plan and the Supplemental Comments do however offer the framework for a workable alternative that we feel will meet the needs for all non-ESMR operations in Region 5. It is this alternative which we propose later in this document.

We have detailed what we feel are the two possible interpretations of the spectrum realignment detailed in Appendix G, Chart G-4 of the Supplemental Comments. The two interpretations are detailed below and their shortcomings identified.

Interpretation One: *Transposition of the entire 3 MHz NPSPAC Band to 851-854.75 MHz* (Chart A)

The first possible interpretation of the proposal for Border Region 5 present in the Supplemental Comments is that the *entire* 3 MHz NPSPAC band, including the Canadian 'primary use' channels between 866 and 867.5 MHz, is simply shifted or transposed downward to a 3 MHz segment of the 851-854.75 MHz band created through the plan. All incumbent public safety users between 851 and 854.75 MHz are then assumed to relocate into the remaining 750 KHz. This proposal proves to be untenable for the following reasons:

- Assuming that the existing 25 KHz channel steps used in the present 851-854.75 MHz range is maintained in the 750 KHz of spectrum used to relocate the incumbent public safety users from 851-854.75 MHz, this creates only 30 channel 'slots' for relocation. Public safety incumbents in the 851-854.75 MHz range

currently occupy 85 channels. This approach simply does not allow an adequate number of channels to accommodate incumbent public safety users.

- Conversion of these relocated incumbents to a 'NPSPAC-like' band plan (12.5 KHz channel steps, deviation reduced to 20 KHz, and use of geographic separation between 12.5 KHz adjacent channel users) would only provide a theoretical maximum of 60 channels. This is, again, short of the 85 channels required for incumbent relocation. Additionally, this theoretical maximum is unlikely to be achievable since the majority of the existing 85 incumbents are located within 60 miles of the Seattle area, essentially eliminating the option of using geographic separation to allow use of 12.5 KHz channels steps.

- Transmit combining issues also are significant with the reduced band size. Telescoping the users that are currently spread over the 851-854.75 MHz channels in Region 5 into the 750 KHz present as in the Supplemental Comments will likely be difficult due to transmitter combining challenges. These combining issues will either greatly increase tower (antenna/combiner) costs, require transmitter upgrades to much higher power levels, or require the addition of sites. These same issues are present in the business, industrial/land transportation and high elevation SMR (high-SMR) spectrum.

- It should also be noted that while extensive use is made in the Seattle-Tacoma-Everett area of the entire NPSPAC allocation, including many systems operating on the Canadian primary-use channels between 866 and 867.5 MHz, the transposition of the entire NPSPAC band would effectively create full US-primary status for all users in the new allocation (since 851 to 854.75 is US-primary spectrum by treaty). Many of these systems are currently using the NPSPAC Canadian primary/U.S. secondary assignments for wide area systems (engineered to meet the power flux density limits established by treaty for such secondary use, as described in an exchange of letters between the U.S. and Canada titled *Addendum to Interim Arrangements Concerning the Use of Certain*

Frequency Bands in the Range 806-960 MHz[1] *and embodied in §90.619(c)(3)of the Commission's Rules*). While this change would benefit those agencies currently operating systems on a secondary basis to Canadian operations and effectively grant primary status to such users, we suspect this change is unintended.

Interpretation Two: *Transposition of the U.S. Primary Portion of the NPSPAC to 851-854.75 MHz* (Chart B)

The second possible interpretation of the proposed band plan suggested by Appendix G, Chart G-4, would have only the US-primary NPSPAC channels (the upper 150 channels, spaced at 12.5 KHz between channel centers, from 867.5 to 869 MHz) shifted downward to the 851-854.75 band segment, leaving the U.S.-secondary channels where they are presently (between 866 and 867.5 MHz). This transposition of 1.5 MHz of the present 3 MHz NPSPAC band would require relocation of many incumbent public safety systems presently operating in the 851-854.75 MHz range since these assignments are well distributed through out the existing band segment.

- This approach does have a significant positive benefit to incumbent public safety users in that the combined channel count of the transposed band and the channel count of 851-854.75 MHz incumbents creates 5 new channel pairs available for added growth of Region 5 public safety radio systems. It should be noted that the added channel count assumes 25 KHz spacing, full deviation and no geographic offsets between systems.

- If the revised plan permitted 'NPSPAC-like' channel planning (12.5 KHz channel steps, reduced deviation and geographic offsets) throughout the entire 851 to 854.75 MHz range, as many as 95 new public safety channels could theoretically be created. As a practical matter however, given the high concentration of need in the Puget Sound region (centered on Seattle), the ability to suitably 'spread'

[1] *Addendum to Interim Arrangements Concerning the Use of Certain Frequency Bands in the Range 806-960 MHz, December 9, 1994*

channels to obtain the needed geographic separation to operate on 12.5 KHz channel centers is limited. The net impact of this channelization plan would be to create more than the 5 additional channels present with a 25 KHz channelization plan but less that the theoretical 95 new channel maximum. This approach clearly has the capability of creating quite a few additional public safety channels and warrants inclusion of a 'NPSPAC-like' channel plan in the new band plan.

- It should be noted that conversion to a pure 12.5 KHz channel step band plan is not desirable since the vast majority of existing radios in use by Region 5 public safety agencies are not capable of adequate intermediate frequency (IF) selectivity to operate on 12.5 KHz spacing without geographic offsets. Conversion to such a fully narrowband approach would require that tens of thousands of base, mobile and portable radios be replaced in Region 5 alone (at significant added cost beyond that anticipated by the Consensus Plan)

- In spite of the apparent advantages of the second interpretation of Chart G-5 of Supplemental Comments as described above, the proposal presented in the Supplemental Comments based on this interpretation is ultimately *fatally flawed* in Region 5. Almost all of the present NPSPAC band is assigned, constructed and in operation. This includes the lower 150 channels (Canada-primary segment of the NPSPAC band) which have been carefully designed and constructed to reduce radiation toward Canadian territory and meet the required power flux density limits agreed to by the United States and Canada. These systems currently support thousands of radios and they cannot be treated as unused spectrum in any spectrum rebanding proposal.

  We interpret the rebanding plan shown in the Supplemental Comments as leaving these channels 'sandwiched' between the two new allocations for NEXTEL low elevation, low power ESMR systems (currently proposed as 863.9-866 MHz and 867.5-869 MHz in Appendix G). This would subject these systems to untenably high levels of interference and make their use almost impossible. The isolation of

these channels between the two interfering NEXTEL band segments also prevents public safety agencies from adopting radios that provide improved receiver filtering. This fact alone suggests that all public safety allocations, both U.S. primary and U.S. secondary, must be located at the lower extreme of the 800 MHz band. Finally, given that the majority of public safety trunked and conventional systems currently operating in Region 5 make use of the Canadian-primary channels on a secondary basis, this band plan is unacceptable and may actually *increase* the incidence of interference to public safety radio systems by NEXTEL facilities.

SERS Alternative Proposal (Chart C)

We wish to propose that a third option is likely to resolve the issues identified elsewhere in this document, to increase greatly the availability of public safety radio spectrum (and indeed offers significant relief to business, industrial/land transportation, and high-elevation SMR operators if the benefits provided public safety are extended to these other user pools) and to greatly reduce or eliminate the harmful interference issues currently being experienced by all non-NEXTEL users in Region 5. Indeed, this proposal may also offer 'green space' in which relocating licensees may temporarily 'park' their radio systems if such green space is required. The following describes briefly our alternative proposal:

- The 1.5 MHz wide U.S.-primary NPSPAC allocation shifts from 867.5-869 MHz to 851-852.5 MHz. These systems maintain the NPSPAC channel plan and are simply 'transposing' their systems downward. All NPSPAC plan configuration details remain in place (12.5 KHz channel steps, reduced deviation and geographic offsets)

- Incumbent 851-854.75 MHz non-public safety users shift to 862.25-863.9 MHz. Incumbent non-public safety users currently located in the range of 862.25-863.9 MHz remain unaffected.

- Incumbent public safety users spread over the original 851-854.75 MHz allocation relocate into the 852.5-854.75 MHz allocation and adopt the NPSPAC configuration (12.5 KHz channel steps, reduced deviation and geographic offsets). This approach will realize the maximum number of additional 800 MHz channels available for incumbent relocation and the expansion of existing systems, creating a *theoretical* maximum of an additional 90 channels.

- The FCC modifies CFR 47, Part 90 to allow for power flux density showings to be used to apply for the currently 'unlicenseable' Canada-only spectrum between 854.75 and 862.25 MHz. This spectrum has not been available to United States licensees by 'rule' and has only been available through the filing and granting of waiver requests. This spectrum is fully usable based upon existing treaty agreements between the U.S. and Canada as described in the *Addendum to Interim Arrangements Concerning the Use of Certain Frequency Bands in the Range 806-960 MHz*.:

  > *Further, as an interim measure, the attached text shall be deemed to apply to the 806-821/851-866 MHz band covered by the Arrangement Between the Department of Communications of Canada and the Federal Communications Commission of the United States Concerning the Use of the Band 806 to 960 MHz along the Canada-United States Border. The attached text will be included as a new provision when the arrangement is formally reviewed*[2].

  This language specifically allows the application of the border protection procedures described in the *Addendum* (the "attached text" referred to above), and incorporated into the Commission's Rules under §90.619 (c) (3), to the portion of the 800 MHz band outside the current NPSPAC band. The Commission never took formal action to apply the treaty language to the non-NPSPAC portion of the

[2] Ibid.

band or to embody the ability for all licensees to routinely use the channels between 854.75 to 862.25 MHz on a secondary basis in the United States border regions, as they do in the 866-869 MHz band. The Commission has, however, granted numerous waivers to allowing such use with radiation toward Canada limited to the levels established by treaty. If a modification to Part 90, which reflects the same provisions for secondary use as described in Part 90.619 (c) (3) *Use of frequencies in the 821-824/866-869 MHz band (Channels 601-830) in the U.S./Canada border area,* is made to allow such secondary use by *rule*, relocation of the existing United States users to 854.75 –856.25 MHz becomes not only possible, but relatively routine and simple.

- Following the modification to Part 90, the remaining NPSPAC allocation (the Canada-primary 1.5 MHz segment from 866 to 867.5 MHz) would then be transposed to the 854.75-856.25 MHz range. Use of this spectrum to relocate the many system currently operating in the 866-867.5 MHz range on a secondary basis to Canada is the 'safety valve' that will allow for continued operation by these critical systems. Such use would be conditioned on the same technical and operational limitations currently imposed on U.S. users of Canadian-primary NPSPAC channels. Maintaining precisely the same language, which is specifically employed in the treaty documents, makes such a transposition viable.

- The remaining spectrum between 856.25 and 862.25 MHz would be divided evenly amongst public safety, business, industrial-land transportation and high SMR operations, greatly increasing the opportunity for reduced challenges in the relocation process and resulting in the availability of additional spectrum for all users at 800 MHz. Based upon Chart G-4 in Supplemental Comments, NEXTEL will presumably be vacating all spectrum below 863.9 MHz. The ability to allow business, industrial-land transportation and high SMR operations to expand beyond the 862.25-863.9 MHz segment proposed in Appendix G, Chart G-4 helps to resolve the issue of the 'missing' 2 MHz guard band required to avoid harmful interference to these users by NEXTEL operations. Business, industrial-land

transportation and high SMR operations who can engineer their systems to meet the power limitations imposed by the U.S./Canada treaty will benefit by being further from NEXTEL operations, which is likely to enhance operations compared to those closer to the NEXTEL band segment which starts at 863.9 MHz. This added spectrum for business, industrial-land transportation and high SMR operations will help revitalize small and large businesses that have been significantly impacted by the expansion of NEXTEL operations over the past decade.

- We are currently hampered in our ability to create and expand a unified public safety communications system to include systems operated by private hospitals, private ambulance companies, the worlds largest manufacturer or aircraft and other commercial entities otherwise not eligible to make use of the public safety radio system we operate. There has been no licensable spectrum available for these uses in our region for over a decade, making development of systems capable of interoperation with regional public safety systems nearly impossible. With affirmative Commission action to permit the use of available U.S. secondary spectrum, and provision for allocations for *all* categories of users, we hope to be able to interoperate with these entities. We strongly encourage the Commission to expand the allocation of spectrum between 856.25 and 862.25 to allow for these categories of users who are so critical to the general safety of the public and the efficient provision of services and materials in time of disaster.

- We assume that a need remains for a guardband between the analog business, industrial-land transportation and high-SMR users and the interference producing low-site, low-power SMRs. As such, we propose a modest guardband of 0.5 MHz be created. This protection zone would be present from 863.9 to 864.4 MHz. It is unclear if a wider guardband is required and ultimately how effective 0.5 MHz will be when compared to the originally identified 2 MHz. However, limited protection is an improvement over the current lack of isolation between such vastly different wireless services. The more technically inclined commenters may

wish to address if this should be returned to a band segment closer to the recommended 2 MHz.

- NEXTEL would then make use of the vacated Canada-primary NPSPAC spectrum, as well as the two band segments on either side of the Canadian NPSPAC segment. Use of these channels on a secondary basis is a near-perfect 'fit' given the NEXTEL low-site, low-power system design. NEXTEL will very likely be able to use these secondary channels to within a few tens of mile of the Canadian border with careful system design. Public safety systems have entirely different system architectures and would generally be unable to use such secondary-use spectrum close to the Canadian border as effectively as NEXTEL.

- NEXTEL should be expected, as a part of the process, to work cooperatively with their Canadian technology partner, TELE-MOBILE, and to work cooperatively with all users in the United States making use of the newly available public safety, business, industrial-land transportation and high SMR channels between 854.75 and 862.25 (and similarly where U.S.-primary allocations are concerned). At all times, NEXTEL and its *partners and subsidiary companies* should be expected to make their best efforts to coordinate the widest possible use of the spectrum in question and to take no action which reduces the availability of non-NEXTEL spectrum to others for NEXTEL's own competitive advantage.

- There is an agreement between the U.S. and Canada that has the potential to affect U.S public safety use of Canadian primary channels between 854.75 and 862.25 MHz in the Region 5 border zone. The *Special Coordination Procedure for the Use of Frequencies in the Bands 806-821 MHz and 851-866 MHz for Land Mobile Services* allows NEXTEL and its Canadian counterpart, TELE-MOBILE "to coordinate and use specific primary frequencies within 100 km of the Canada-United States border if the power flux density (pfd) of proposed stations exceeds

maximum permitted limits as indicated in the *Arrangement Concerning the Use of the Band 806-890 MHz Along the Canada-United States Border*, as amended."[3]

This agreement designates 51 channel pairs between 810.1375/855.1375 MHz and 816.3875/861.3875 MHz for use by NEXTEL on the U.S. side of border in Region 5 without the requirement for border protection based on power flux density that is applied to other U.S. stations operating Canadian primary channels in Region 5.

Because the *Special Coordination Procedure* is not specifically addressed in the Consensus Plan border zone re-allocation proposal, it is not explicitly clear if the NEXTEL stations now operating on these channels would move into the Low Site, Low Power SMR block above 863.9 MHz. However, the fact that NEXTEL is a signatory to all of the Consensus Plan documents implies full acceptance of this added transition step. Continued use of these channels by NEXTEL would have a serious impact on public safety use in the United States of Canadian primary channels both because these channels occupy spectrum that might be used by public safety systems and because NEXTEL stations operating on these channels would cause interference to public safety systems operating on other nearby Canadian primary channels.

The status of these channels must be addressed as part of any plan to allow domestic public safety use of Canadian primary channels in the border zone, if such use is allowed routinely under the Rules (as it should be, based on the language contained in the *Addendum to Interim Arrangements Concerning the Use of Certain Frequency Bands in the Range 806-960 MHz[4])*.

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[3] *Special Coordination Procedure for the Use of Frequencies in the Bands 806-821 MHz and 851-866 MHz for Land Mobile Services, as revised October 2001.*

[4] *Addendum to Interim Arrangements Concerning the Use of Certain Frequency Bands in the Range 806-960 MHz, December 9, 1994.*

NEXTEL to Return all Spectrum

Nextel's commitment to vacate existing spectrum in the border area must be comprehensive and include return of all spectrum not a part of the low site, low power SMR blocks (as currently proposed in Appendix G, Chart G-4 863.9-866 MHz and 867.5-869 MHz and alternatively 864.4-869 MHz as proposed in Chart C in this document) in Region 5. This means that public safety, business, industrial-land transportation, and traditional high-SMR spectrum be vacated in the area from the U.S.-Canada border to the 140 km line in the United States. This will allow greater flexibility in the relocation and adjustment of non-Nextel licensees in the border regions. This also creates an incentive to existing licensees to move promptly since they would be able to modify and increase their system footprint. The current situation essentially prevents any useful improvements or modifications to incumbent systems.

National and International Interoperability Channels

Ensuring that a group of common mutual aid/interoperability channels are present in any final plan is an absolute requirement for success, particularly following the events of September 11th, 2001. While the existing band plan and treaty agreements have provided five channel pairs which are common across all of North America (hence the naming of these channels as International Calling and International Tactical 1-4), having a different group of channels used for mutual aid in Canada or Mexico is far less significant than ensuring that some uniform capability exists within the entire United States.

Conclusion

The suggestions offered as an alternative to the two interpretations of the Supplemental Comments is the only solution for Border Region 5. Without adopting these proposals in total, there simply appears to be no way in which

existing systems may be ‘fit’ into the very limited spectrum resource present in Region 5.

Substantial additional work needs to be done to ensure that the interoperability channel needs and plans for the border regions are integrated into the proposal and ultimate rule making. Currently, it appears that the Canadian interoperability channels, the border area interoperability channels and the interoperability channels used in the non-border areas of the U.S. may all end up being different. This is simply not acceptable in an era where public safety requires more, not less, communications interoperability.

Clearly, without Commission action to allow complete access to all spectrum between 854.75 and 862.25 MHz, through modification of Part 90, the Consensus Plan is unlikely to be viable in the border regions. As such, we strongly urge the Commission to adopt the Consensus Plan and Supplemental Comments with the changes noted herein.

Respectfully Submitted,

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